

## How to Create a Domain Controller

### Overview

The purpose of this guide is to show you how to secure your network and improve its management capabilities by implementing a domain-based network infrastructure. First, I will show you how to set up Active Directory by promoting a Windows Server to a Domain Controller (manually and through a script). Then, I will show you how join a Windows PC to your new domain (manually and through a script).

### Prerequisites

- One Windows server with a static address
- One Windows PC

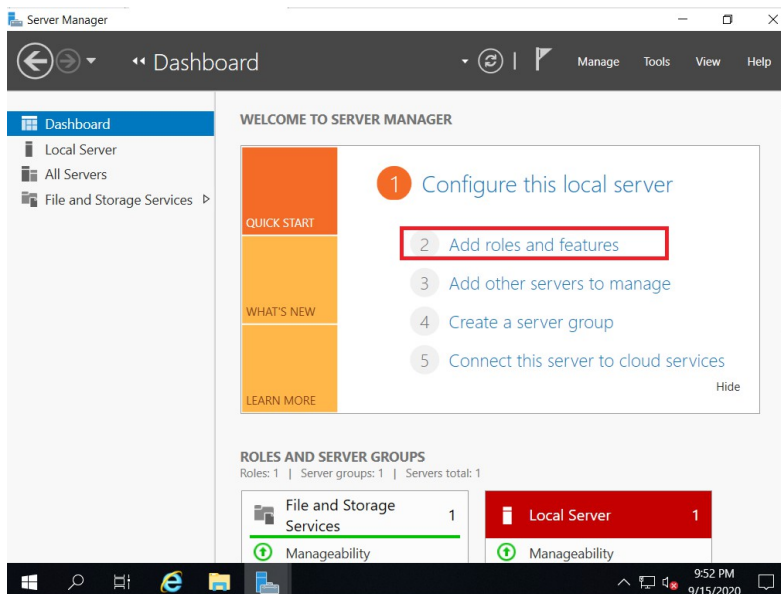
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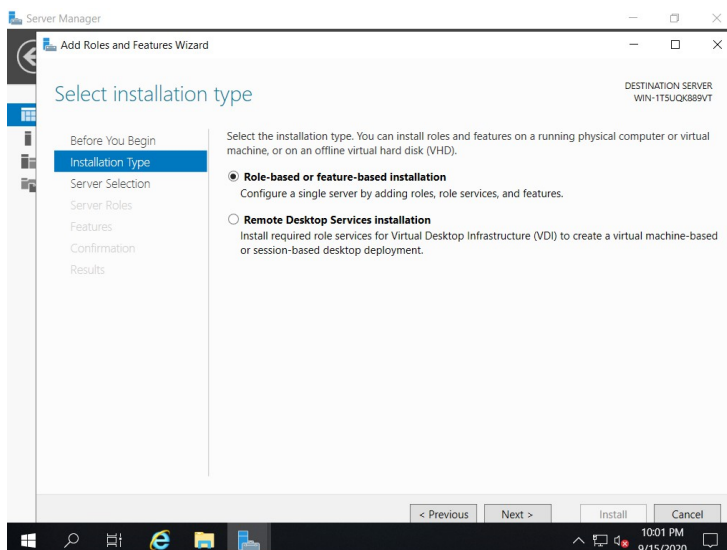
## How to Turn Your Windows Server into a Domain Controller

Step 1: Log on to the server as an administrator.

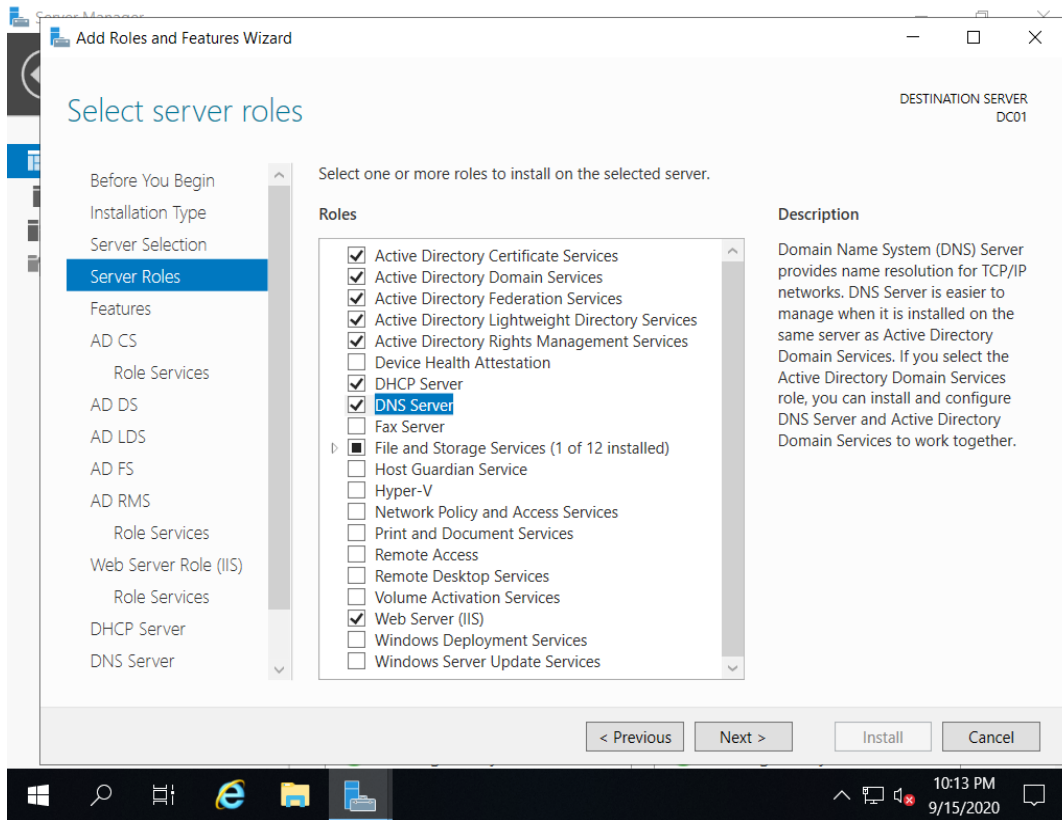
Step 2: Open Server Manager and click the “Add roles and features” button on the right side of the screen.



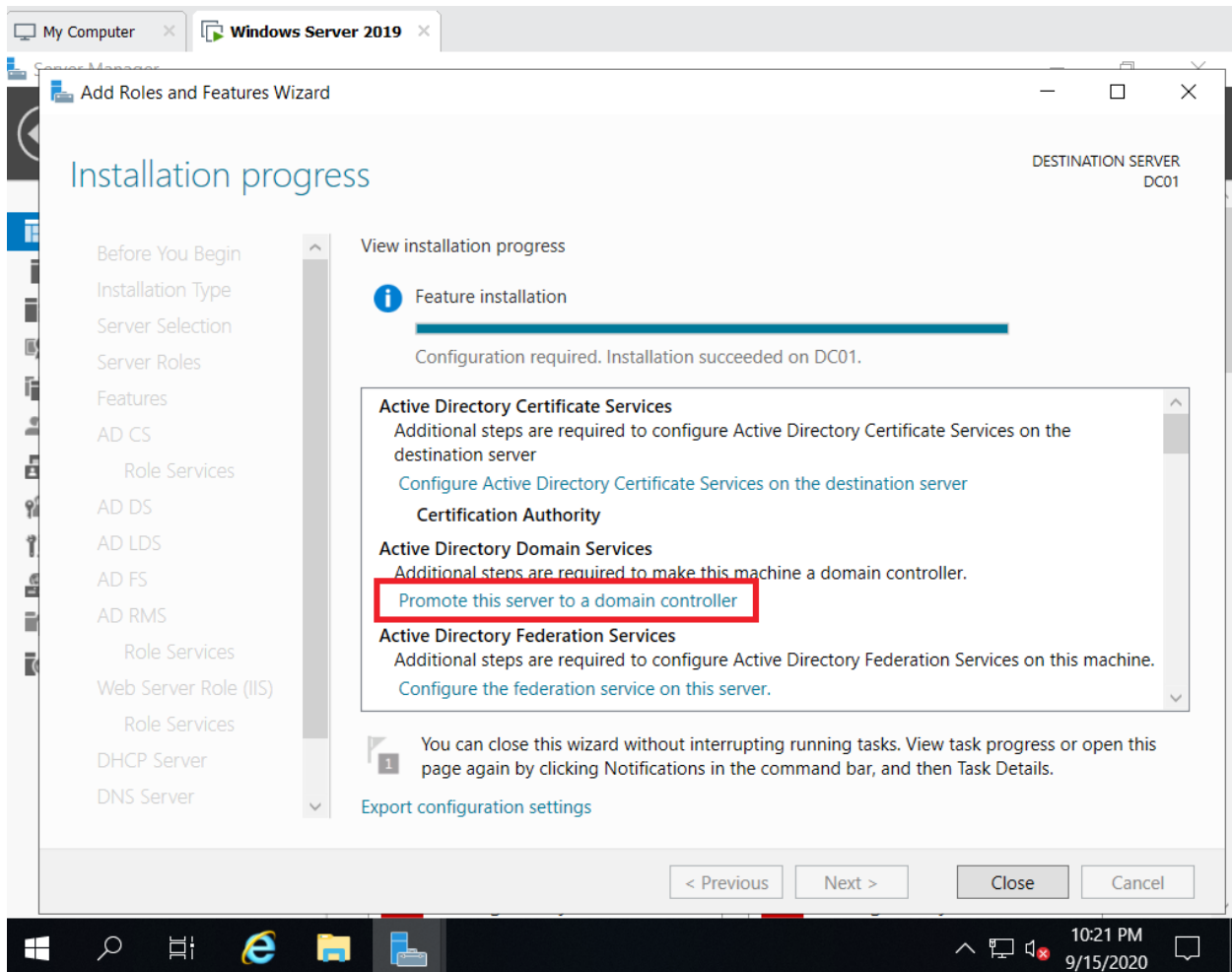
Step 3: Select “Role-based or feature-based installation.”



Step 4: Select the roles in the image below, then press next.

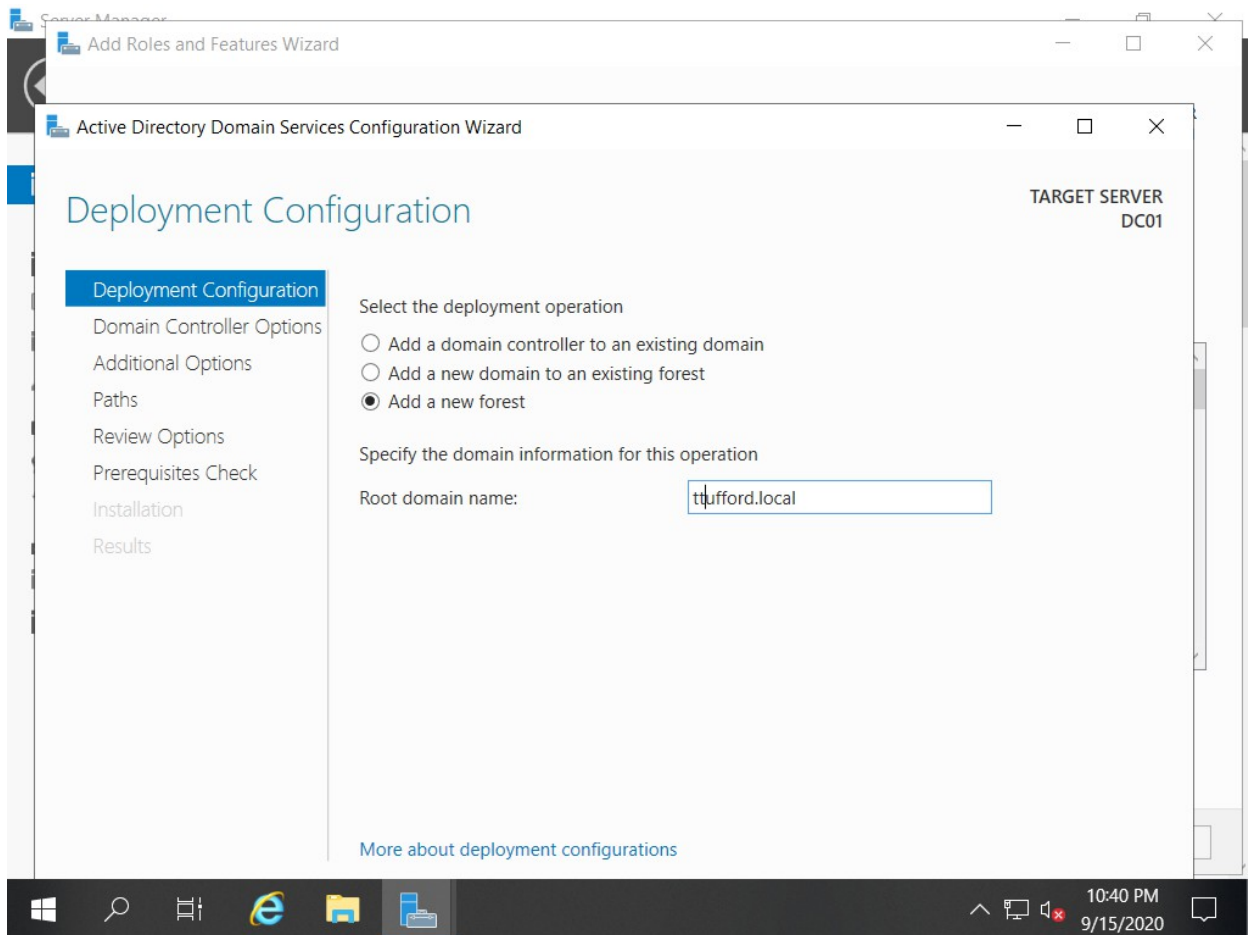


Step 5: Wait for the features to install, then click the option to “Promote this server to a Domain Controller.”

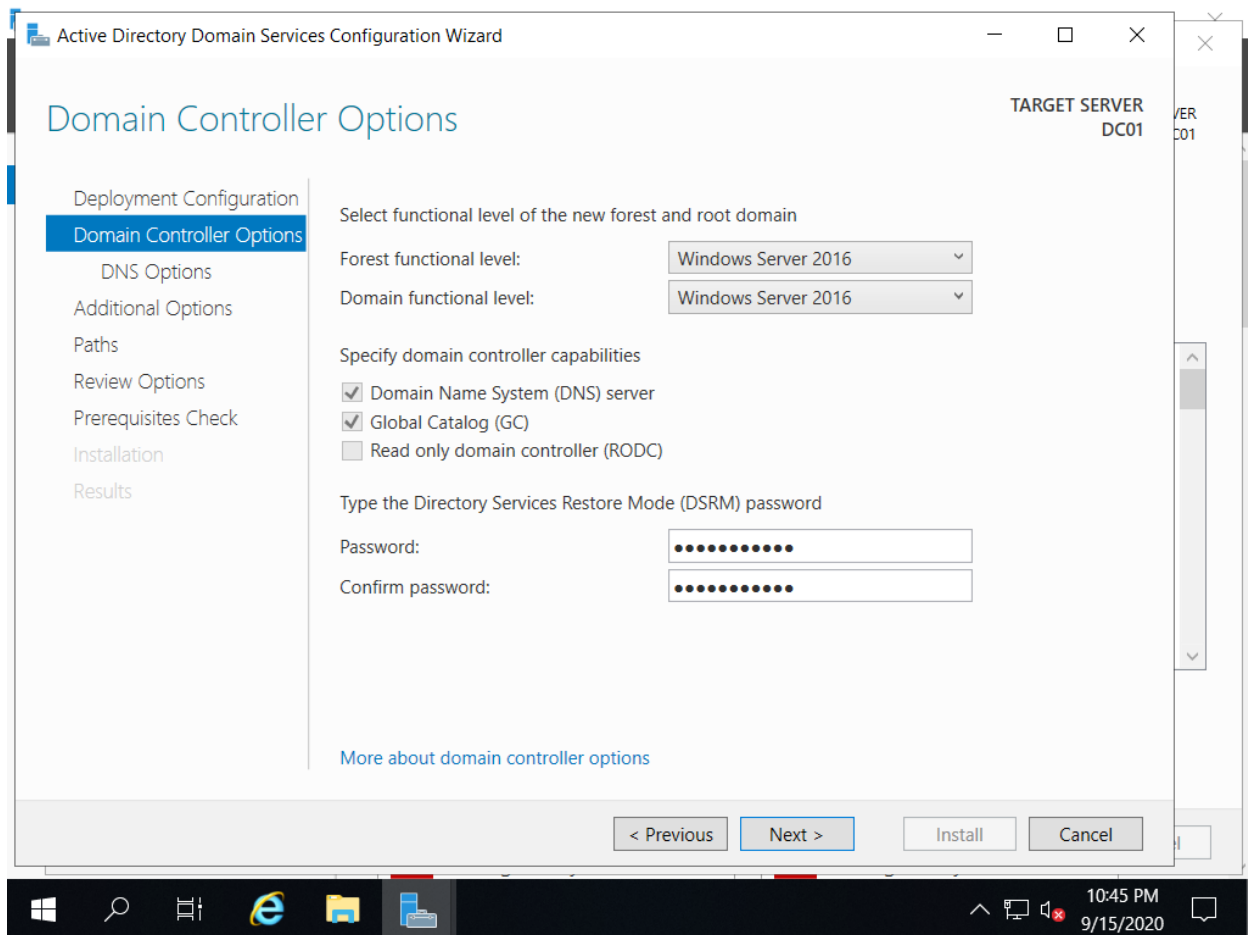


Step 6: Next, you will be directed to the Active Directory Domain Services Configuration wizard.

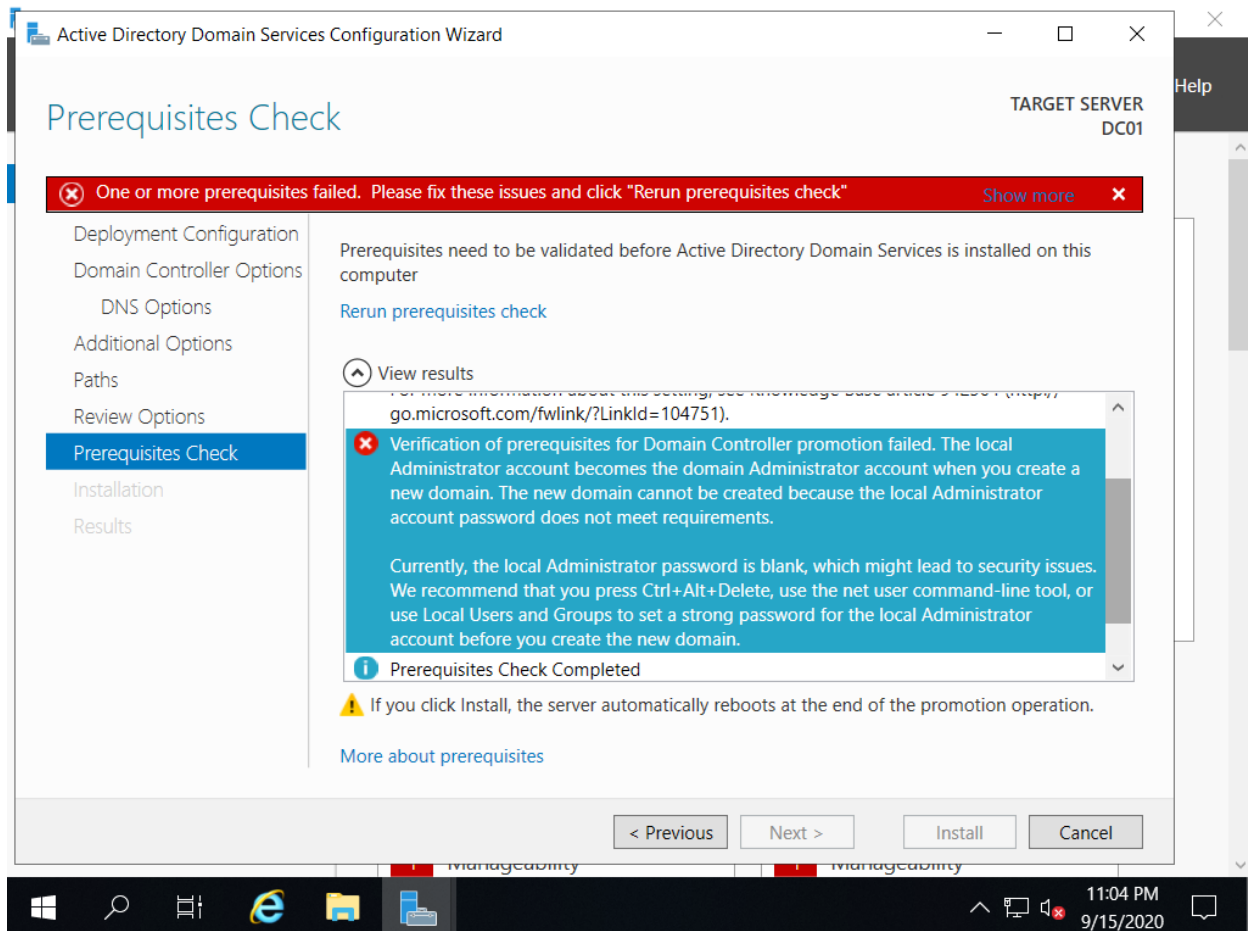
Type the name of your domain in the “Root domain name” box on the bottom, then press next.



Step 7: Then, specify DNS and GC capabilities by checking the boxes. Afterward, you will be asked to enter your password and press next.



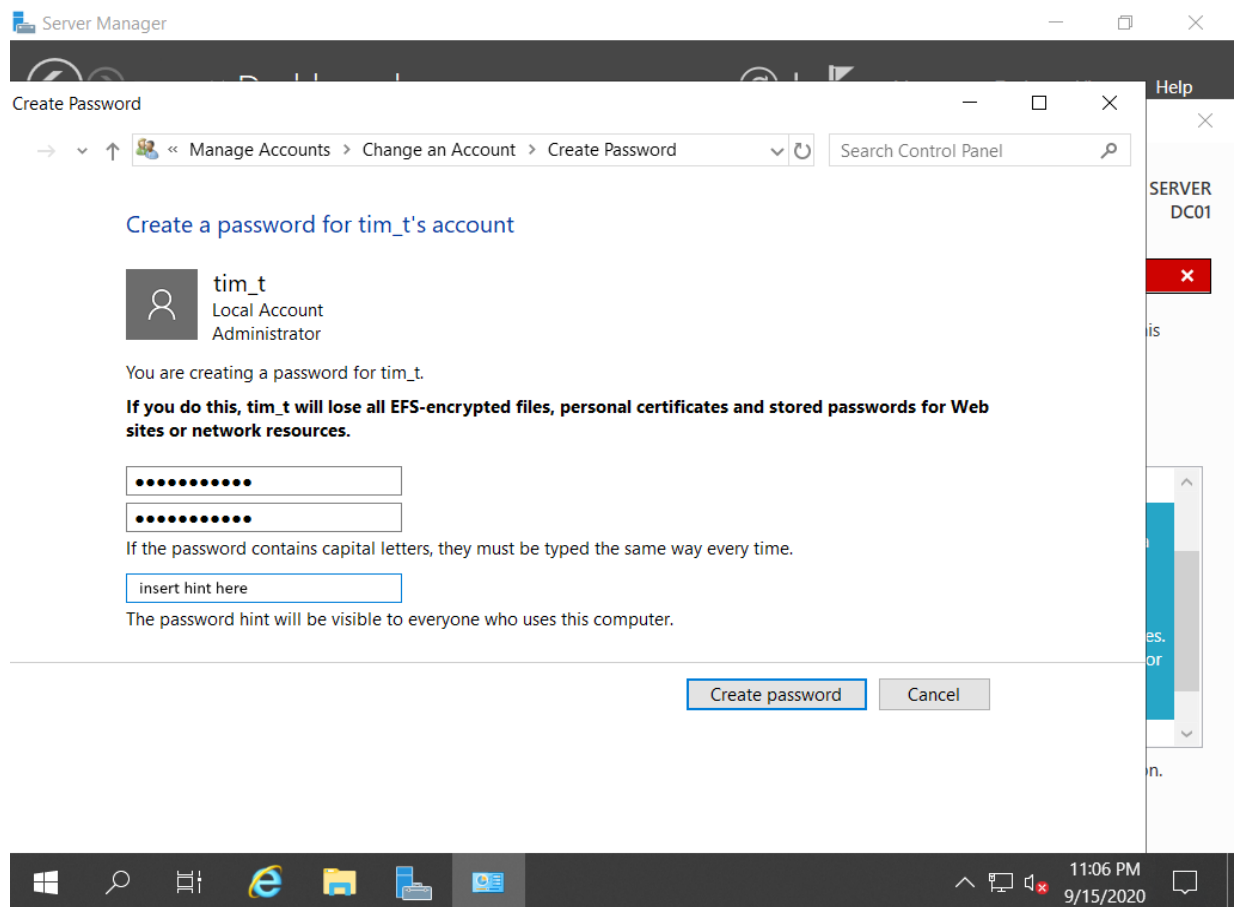
Step 8: Next, you will be taken to the Prerequisites Check section. You might not be able to proceed until you do a bit of troubleshooting. The result below states that I do not have a password under my administrator account.



Step 9: If you had the exact same error:

- a. Go to the Control Panel.
- b. Click Manage Accounts.
- c. Click Change an Account.
- d. Then, click Create Password.
- e. Enter a password then click OK.

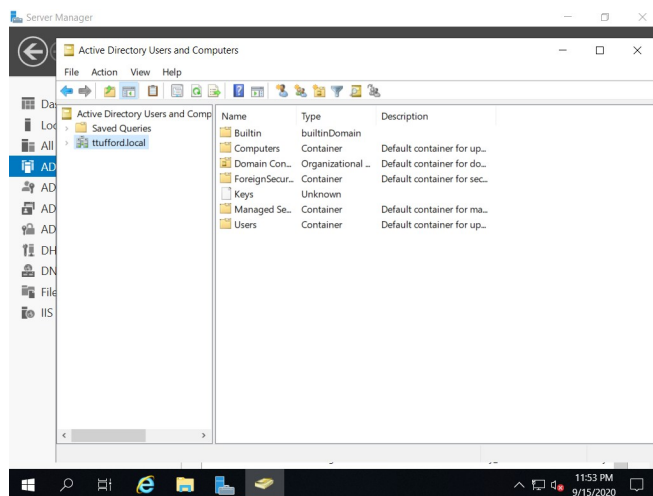
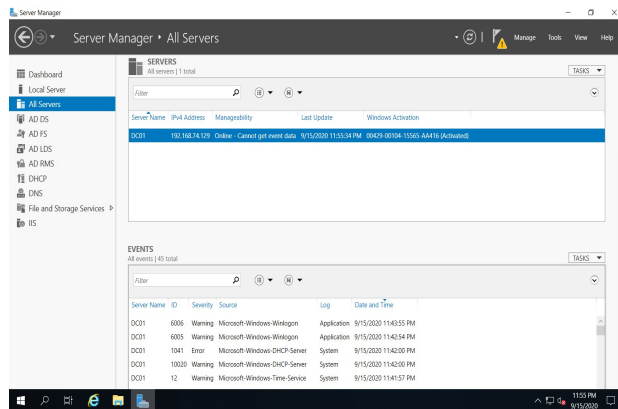
I also had to restart the server for the changes to take place. Afterward, I was able to pass the prerequisite test.





Step 10. Validate that you can open the installed services.

Below are screen shots of Server and Events and Active Directory Users and Computers.



## How to Turn Your Windows Server into a Domain Controller (with PowerShell)

#PowerShell script for AD DS Deployment

#!!!!!! Your device will reboot after you run this script !!!!!

Import-Module ServerManager

# Define which features to install

\$featuresToCheck = @('AD-Domain-Services', 'AD-Certificate', 'AD-Federation-Services', 'DHCP', 'DNS', 'Web-Server')

#Check and install each feature

```
foreach($feature in $featuresToCheck){
    $featureStatus = Get-WindowsFeature -Name $feature
    if(-not $featureStatus.Installed){
        Write-Host "Installing $feature..."
        try{
            Install-WindowsFeature -Name $feature -IncludeManagementTools -ErrorAction
Stop
            Write-Host "$feature installed successfully"
        }
        catch{
            Write-Host "Failed to install $feature"
        }
    }
    else{
        Write-Host "$feature is already installed."
    }
}
```

#Prompt the user for a Domain Name and a Netbios Name

\$domainName = Read-Host "Please enter the Domain Name (e.g., example.com): "  
 \$domainNetbiosName = Read-Host "Please enter the Netbios Name (short name for the domain): "

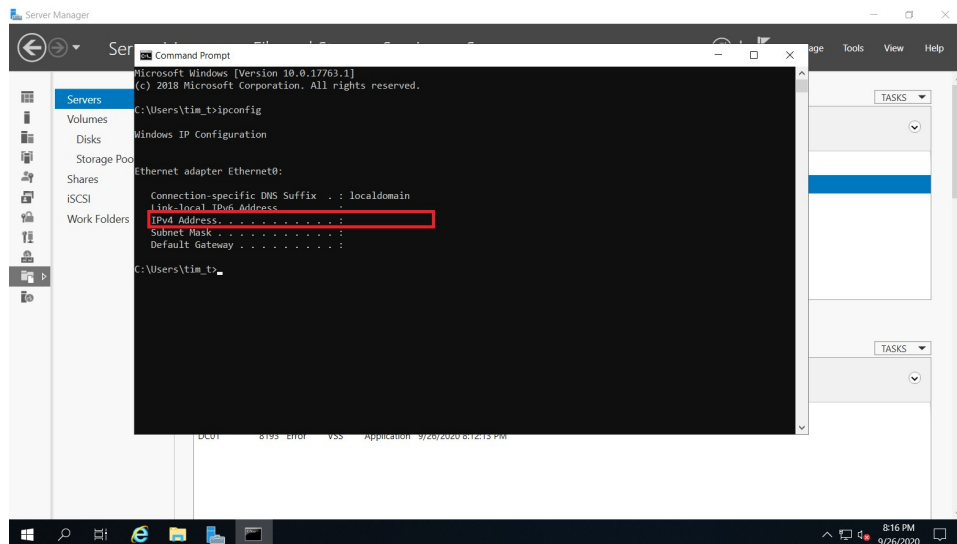
#Import ADDSDeployment module and install AD DS Forest

```
Import-Module ADDSDeployment
try {
    Install-ADDSForest `
        -CreateDnsDelegation:$false `
        -DatabasePath "C:\Windows\NTDS" `
        -DomainMode "winThreshold" `
        -DomainName $domainName `
        -DomainNetbiosName $domainNetbiosName `
        -ForestMode "winThreshold" `
        -InstallDns:$true `
        -LogPath "C:\Windows\NTDS" `
        -NoRebootOnCompletion:$false `
        -SysvolPath "C:\Windows\SYSVOL" `
        -Force:$true
}
catch {
    Write-Host "Failed to install AD DS Forest: $_"
}
```

## How to Join a Windows PC to Your Domain

Step 1. First, do the following to get the IP of your domain controller:

- a. Log in to your domain controller.
- b. Open the Command Prompt.
- c. Type ipconfig.
- d. Press enter.

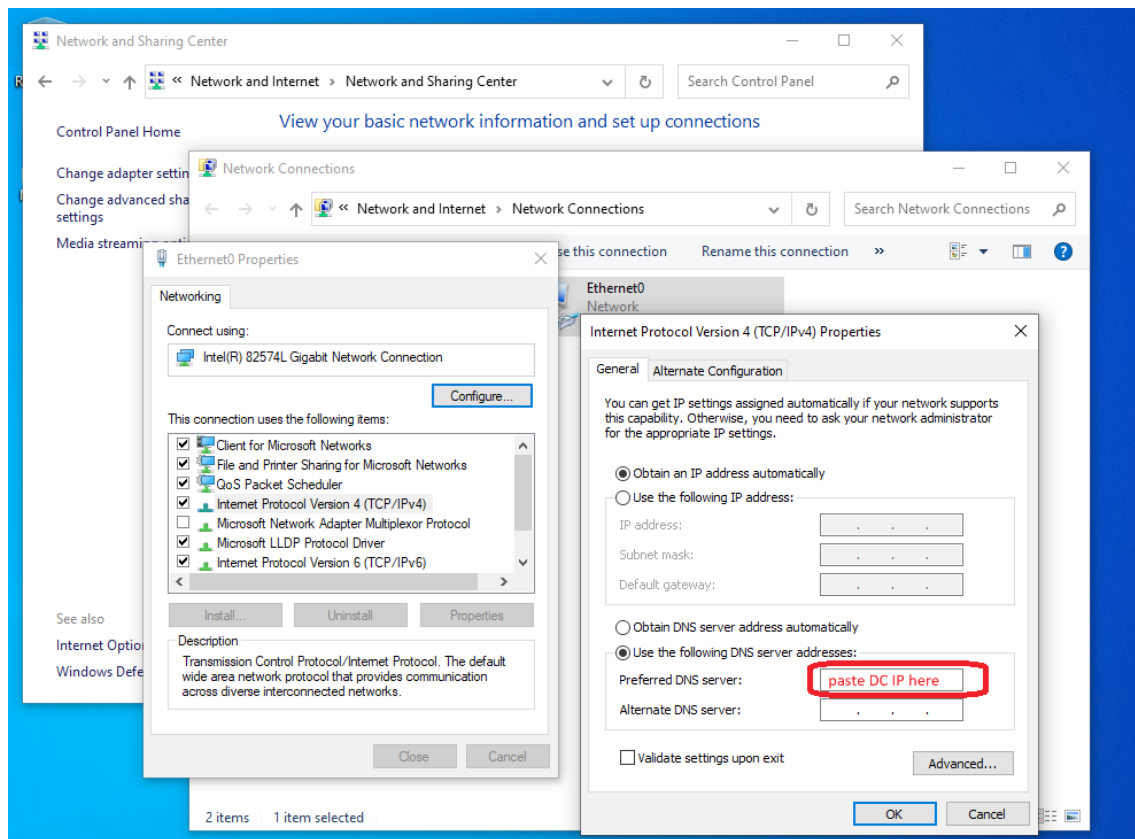


*Note: Your server needs to stay turned on for the rest of these steps to work.*

Step 2. Next, make the domain controller's IP your PC's "Preferred DNS Server" by doing the following:

- a. Log in to your Windows PC.
- b. Then, open the Control Panel.

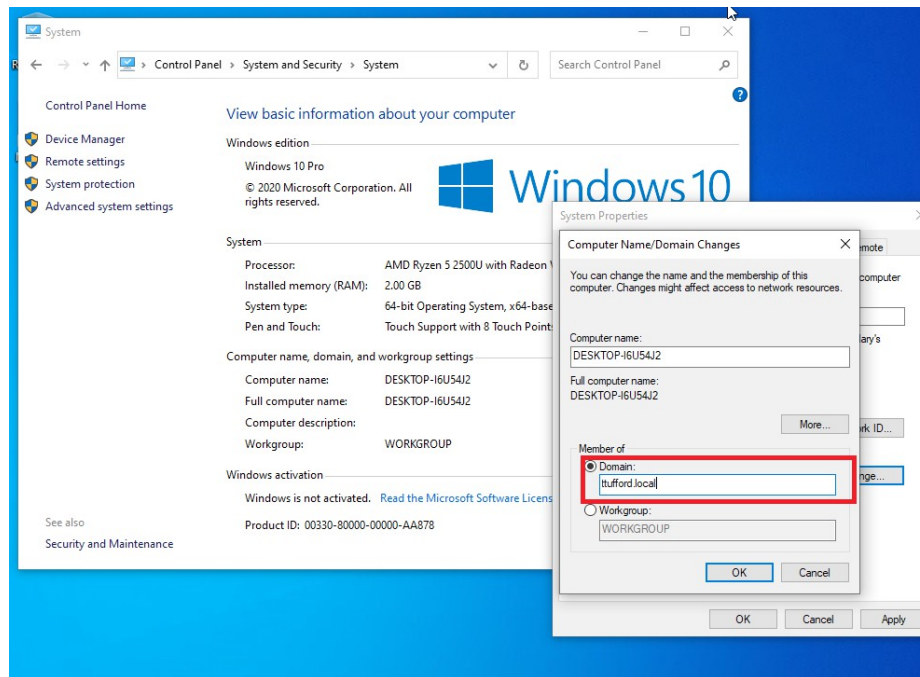
- c. Click Network and Internet.
- d. Click Network and Sharing Center.
- e. Click Network Settings.
- f. Then, click on Ethernet0.
- g. Next, right click.
- h. Select Properties.
- i. Click IPV4.
- j. Select Properties again.
- k. Then, type the IP from Step 1 into the "Preferred DNS Server" field like so:



Step 3. Make your PC a member of your domain by doing the following:

- a. Open the Control Panel.
- b. Select System and Security.
- c. Click System.
- d. Click System Properties.
- e. Then, click Change.

f. In the resultant window, type the name of your domain into the “Domain” field. You will be asked to restart afterword.



Step 4: Open PowerShell, then run the following command to validate whether or not this device has been joined to the domain: `ipconfig/all`.

```
PS C:\Users\tuffo> ipconfig /all

Windows IP Configuration

Host Name . . . . . : DESKTOP-I6U54J2
Primary Dns Suffix . . . . . : ttufford.local
Node Type . . . . . : Hybrid
IP Routing Enabled. . . . . : No
WINS Proxy Enabled. . . . . : No
DNS Suffix Search List. . . . . : ttufford.local
                                localdomain
```

## How to Join a Windows PC to Your Domain (with PowerShell)

#PowerShell script that joins a windows PC to a domain

#!!!!!! This device will restart after this script has finished running !!!!!

#Prompt for domain name, username and password

\$yourDomain = Read-Host "Please enter your domain name: "

\$yourUsername = Read-Host "Please enter your username: "

do{

    \$yourPassword = Read-Host "Please enter your password (minimum 8 characters): "

    #Check password length

    if (\$yourPassword.Length -lt 8){

        Write-Host "Error: Password must be at least 8 characters long."

-ForegroundColor Red

    }

}

while (\$yourPassword.Length -lt 8)

\$domain = \$yourDomain

\$username = "\$yourDomain\\$yourUsername"

\$password = \$yourPassword

\$credential = New-Object System.Management.Automation.PSCredential(\$username,  
(ConvertTo-SecureString \$password -AsPlainText -Force))

#Join the computer to the domain after a successful ping

try{

    # Get the domain controller's hostname

    \$dc = (Get-ADDomainController -DomainName \$domain -ErrorAction Stop).HostName

    #Ping the domain controller

    if(Test-Connection -ComputerName \$dc -Count 2 -ErrorAction Stop) {

        Write-Host "Successfully pinged the domain controller: \$dc" -ForegroundColor

Green

        #Join the device, then restart

        Add-Computer -DomainName \$domain -Credential \$credential -Restart

    }

}

catch{

    Write-Host "Error: Unable to communicate with the domain controller. Ensure that  
the domain name is correct and the domain controller is reachable." -ForegroundColor

Red

    Write-Host "Detailed Error: \$\_" -ForegroundColor Red

}